

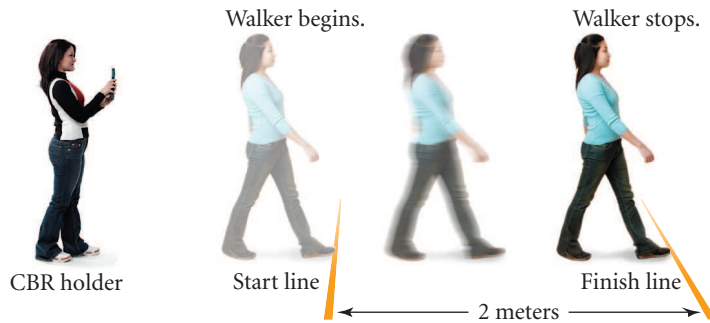
Investigation • Speed versus Time

With Sample Data

Name _____ Period _____ Date _____

In this investigation you will explore the relationship between a walker's speed and the time it takes to walk 2.00 meters.

Step 1 The course was set up by marking a starting line and a finish line 2.00 m apart.



Step 2 The activity was performed as described in the Procedure Note.

Step 3 Data collected by a motion sensor was downloaded to a graphing calculator.

Step 4 The calculator displayed the walk number, the total time for the walk, and the average speed of the walker.

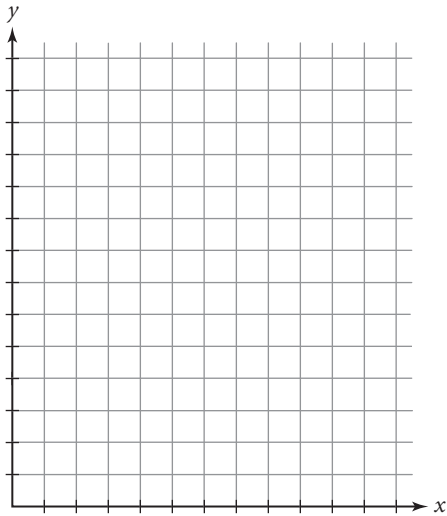
Step 5 Steps 1–4 were repeated five more times, to collect data for six walks, shown in this table. Complete the table by determining the average speed for each walk.

Walk number	Total time (s)	Average speed (m/s)
1	6.2	
2	8	
3	2.3	
4	1.8	
5	4.7	
6	5.9	

Procedure Note

1. Download the INVERSE program to your graphing calculator. ▶ See **Calculator Note 2B: INVERSE Program.** ◀
2. Run INVERSE, and follow the directions that appear on the calculator screen. To begin, the walker stands at the start line, and the CBR holder stands 1 m behind the start line, facing the walker.
3. The CBR holder presses the trigger of the CBR. The CBR will collect data for 10 s. Approximately 1 s after the CBR starts, the walker walks to the finish line and comes to a stop. The walker waits until the 10 s are complete.

Step 6 Enter the six (*total time*, *average speed*) data points into lists in each group member's calculator. Create a graph that shows the data and both axes.



Step 7 Find an equation in the form $y = \frac{a}{x}$ that is a good model for the relationship between total time and average speed. Experiment with different values of a until you find a curve that looks like a good fit for the data.

Step 8 What does the value of a found in Step 7 have to do with the experiment? What kind of units does it have?